

We Claim:

1. A display unit for use with a surgical instrument to be manipulated relative to a patient's anatomy having a surgical instrument body and a tracking unit associated with the surgical instrument capable of communicating with a surgical navigation system comprising:

a communication link to communicate with the surgical navigation system; a screen to display information received from the surgical navigation system; and an attachment device to attach the display unit to the surgical instrument body.

5 2. The display unit of claim 1 wherein the surgical instrument has a tool tip and the screen displays the position of the tool tip relative to a predetermined position.

10 3. The display unit of claim 2 wherein the screen also displays the orientation of the surgical instrument relative to a predetermined orientation.

15 4. The display unit of claim 2 wherein the screen also displays the depth of the tool tip within a surgical site relative to a predetermined depth.

5. The display unit of claim 1 wherein the display is an array of light emitting diodes.

6. The display unit of claim 1 wherein the display unit can be attached to the surgical instrument by a quick release coupling.

20 7. The display unit of claim 1 wherein the display unit includes a function button.

8. The display unit of claim 1 wherein the display unit is attached to the surgical instrument so that the predetermined position and the screen can be viewed at the same time.

25 9. The display unit of claim 1 wherein the display unit displays a diagnostic image.

10. The display unit of claim 9 wherein the display unit also displays an image of the instrument relative to the diagnostic scan image.

30 11. The display unit of claim 1 wherein the display unit also displays an image of the instrument relative to an image of an implant.

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12. The display unit of claim 1 wherein the display unit displays a subset of the information displayed on a monitor associated with the surgical navigation system.

13. The display unit of claim 1 wherein the display unit displays information provided by the surgical instrument.

5 14. The display unit of claim 1 wherein the communication link is wireless.

15. A display unit for use with a surgical navigation system comprising:  
a body;  
a screen capable of displaying data;  
a tracking unit associated with the body that can be tracked by the surgical  
navigation system;  
communications link capable of sending and receiving data to and from the  
surgical navigation system; and  
an attachment device to attach the display unit to a body of a surgical instrument to  
be manipulated relative to a patient's anatomy,  
wherein the screen can display information relating to the position of the surgical  
instrument relative to the patient's anatomy.

10 16. The display unit of claim 15 wherein the screen also displays the  
orientation of the surgical instrument relative to a predetermined orientation.

15 17. The display unit of claim 15 wherein the surgical instrument has a tool tip  
and the screen also displays the depth of the tool tip within a surgical site relative to a  
predetermined depth.

20 18. The display unit of claim 15 wherein the display is an array of light  
emitting diodes.

19. The display unit of claim 15 wherein the display unit is integral with the  
surgical instrument body.

25 20. The display unit of claim 15 wherein the display unit can be attached to the  
surgical instrument by a quick release coupling.

21. The display unit of claim 15 wherein the display unit includes a function  
button.

22. The display unit of claim 15 wherein the display unit is attached to the  
surgical tool so that the predetermined position and the screen can be viewed at the same  
time

23. The display unit of claim 15 wherein the communication link is wireless.

30 24. The display unit of claim 15 wherein the display unit displays a diagnostic  
image.

25. The display unit of claim 24 wherein the display unit also displays an image of the instrument relative to the diagnostic scan image.
26. The display unit of claim 15 wherein the display unit displays information provided by the surgical instrument.
- 5 27. The display unit of claim 15 wherein the display unit also displays an image of the instrument relative to an image of an implant.

28. A surgical tool comprising;
  - a tool body;
  - a tool tip;
  - a communications link associated with the tool body capable of sending and receiving data to and from a surgical navigation system;
  - a display unit associated with the tool body wherein the display unit is in communication with the surgical navigation system; and
  - a tracking unit associated with the tool body such that the surgical tool can be tracked by the surgical navigation system,
- 10 wherein the display unit has a screen capable of displaying information relating to the position of the tool tip relative to a predetermined position.
29. The surgical tool of claim 28 wherein the screen also displays the orientation of the surgical tool relative to a predetermined orientation.
30. The surgical tool of claim 28 wherein the screen also displays the depth of the tool tip within a surgical site relative to a predetermined depth.
- 15 31. The surgical tool of claim 28 wherein the display is an array of light emitting diodes.
32. The surgical tool of claim 28 wherein the display unit is integral with the tool body.
- 20 33. The surgical tool of claim 28 wherein the display unit includes a function button.
34. The surgical tool of claim 28 wherein the display unit is associated with the surgical tool so that the predetermined position and the screen can be viewed at the same time.
- 25 35. The surgical tool of claim 28 wherein the surgical tool is a power tool.
36. The surgical tool of claim 35 wherein the power tool is a surgical drill.
37. The surgical tool of claim 35 wherein the power tool is a surgical saw.
38. The surgical tool of claim 28 wherein the surgical tool is a non-powered hand instrument.

39. The surgical tool of claim 38 wherein the non-powered hand instrument is a biopsy needle.

40. The surgical tool of claim 28 wherein the communications link is wireless

41. A method of positioning a tool tip of a surgical tool relative to a predetermined position, the method comprising the steps of:  
viewing the position of the tool tip relative to the predetermined position on a display unit attached to the surgical tool, the display unit receiving data on the location of the tool tip from a surgical navigation system; and

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guiding the tool tip to the predetermined position while viewing the both the predetermined position and the display unit.

42. The method of claim 41 wherein the display unit also displays the orientation of the surgical tool relative to a predetermined orientation.

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43. The method of claim 41 wherein the display unit also displays the depth of the tool tip within a surgical site relative to a predetermined depth.

44. The method of claim 41 wherein the display unit is an array of light emitting diodes.

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45. The method of claim 41 wherein the display unit is integral with the surgical tool body.

46. The method of claim 41 wherein the surgical tool is a power tool.

47. The method of claim 46 wherein the power tool is a surgical drill.

48. The method of claim 46 wherein the power tool is a surgical saw.

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49. The method of claim 41 wherein the surgical tool is a non-powered hand instrument.

50. The method of claim 49 wherein the non-powered hand instrument is a biopsy needle.

51. A method of positioning a surgical device relative to a patient's anatomy, the method comprising the steps of;

5 viewing information representing the position of the surgical device relative to the patient's anatomy on a display unit attached to the surgical device, the display unit receiving data about the location of the surgical device and data about the location of the patient's anatomy from a surgical navigation system; and

10 manipulating the surgical device relative to the patient's anatomy using data displayed on the display unit while viewing the both the patient's anatomy and the display unit.

52. The method of claim 51 wherein the information on the display unit includes kinematics information.

53. The method of claim 51 wherein the surgical device is a power tool.

54. The method of claim 53 wherein the power tool is a surgical drill.

55. The method of claim 53 wherein the power tool is a surgical saw.

15 56. The method of claim 51 wherein the surgical device is a non-powered hand instrument.

57. The method of claim 56 wherein the non-powered hand instrument is an external fixator device.

20 58. The method of claim 56 wherein the non-powered hand instrument is a biopsy needle.